

ABSTRACT

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An apparatus for polishing a semiconductor wafer comprising a rotatable polishing platen having an upper surface, a polishing pad fixedly attached to the upper surface, a polishing slurry containing a mechanical abrasive deposited on the upper surface of the polishing pad. Mounted above the polishing pad is a rotatable polishing head assembly having a shallow recessed face adapted to centrally hold the upper back surface of the substrate, the recessed face is oriented substantially parallel to the upper surface of the polishing platen. The rotatable polishing head assembly has its rotatable axis offset relative to the rotatable axis of the polishing platen. A non-rotary cylindrical actuator assembly is coaxially oriented about the outer edge of the rotatable polishing head assembly with a ditched ring removably attached to the bottom surface of the cylindrical actuator assembly. The ditched ring also has a bottom section of a reduced wall thickness of approximately 5 mm. A multiplicity of conduit grooves are formed in the bottom section of the ditched ring that allows a boundary layer of abrasive slurry to travel unimpeded to the rotating semiconductor wafer. The reduced wall thickness at the bottom of the ditched ring is configured to displace wrinkles from the outer edge of the wafer to the outer periphery of the ditched ring. This solves the edge exclusion problem, while the concentric conduit grooves allow unimpeded tracks of abrasive slurry to uniformly remove microscratches from the planarized surface of the wafer.